

REMARKS/ARGUMENTS

Claims 1 - 24 remain in the application.

In the Office Action, the Examiner imposed a restriction between two groups of claims. According to the Examiner, Group 1 consists of claims 1 - 24 while Group 2 consists of claims 25 - 26. In confirmation of the election previously made by telephone, Applicant confirms the election of the Group 1 claims.

The Examiner also indicated that FIGS. 1 - 3 should be labeled as "prior art". Appropriate amendments to the drawings are proposed herein.

The Examiner also rejected claims 7, 9 - 12, and 17 - 22 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

With regard to 7, the Examiner indicated that the limitation of "formation of a desired pattern" lacks antecedent basis. It was also indicated that it is unclear when it is formed. Claim 7 has been amended to make it clear that "formation of a desired pattern" results from a plurality of selective depositions. It is believed that the amendments traverse the rejection.

With regard to claims 9 and 11, the Examiner indicated that the claims appear to be duplicate claims. It was Applicant's intention that these claims be interpreted to have different scopes. It was intended that claim 9 cover situations where a particular cell is inactive at a portion of its possible deposition locations and that it is active at a different portion of its potential deposition locations. On the other hand it was intended that claim 11 cover situations where a particular cell was active at all of its potential deposition locations or that it was inactive at all of its potential deposition locations. Claims 9 and 11 have been amended to clarify these intended features.

The Examiner also suggested that in claim 9, the phrase "is inactive" should be changed to -- is made inactive --. Claim 9 has been amended to make this suggested change.

Regarding claims 10 and 12, the Examiner indicated that they appear to be duplicate claims. The Examiner also noted that they are in improper format, since they do not recite process steps. The Examiner further indicated that the limitation of "resolution" lacks antecedent basis. Finally the Examiner indicated that claims 10 and 12 are unclear as claim 10 states that the resolution of a layer is better than that of a net area, while claim 12 states

that the resolution is defined by the net area. These issues have been considered and the claims amended. First, as the relationship between their base claims (9 and 11, respectively) has been clarified, the claims cannot be considered to be duplicate claims. Second the claims have been amended to set forth the relationship between "resolution" and "layer" and in particular they have been amended to indicate that "a resolution achieved in forming a given layer is defined by ...". It is believed that the clarification of the base claims resolves the lack of clarity associated with claim 10 indicating that the resolution is better than a net area while claim 12 indicates that the resolution is substantially defined by a net area. The differences in claims 10 and 12 arise due to the ability or lack of ability of cells to be activated or inactivated at a portion of the potential deposition positions to which the cell is positioned during formation of the given layer.

The Examiner indicated that the limitation of "electrochemical fabrication" in claims 17 - 22 lacks antecedent basis. In response to this rejection, the phrase "electrochemical fabrication" has been deleted from the claims.

The Examiner further indicated that the limitation of "planarization process" of claim 22 lacks antecedent basis. Applicant does not understand this rejection as "planarization process" is introduced with the indirect article "a" and its relationship to various other portions of the process is defined. A couple of minor amendments to this claim have been made. Reconsideration of this rejection is requested and if the rejection is maintained Applicant would appreciate it if the Examiner can provide more information about the perceived issue.

Various additional amendments to the claims have been made to clarify the subject matter of the invention. Some of these amendments broaden the claims while other amendments may narrow some claims.

In addition to the various issues noted above, the Examiner also provisionally rejected claims 1 - 24 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over (A) claims 1-52 of copending Application No. 10677498 in view of Cohen '630; (B) claims 1-48 of copending Application No. 10434519 in view of McFarland et al.; (C) claims 1-50 of copending Application No. 10271574 in view of McFarland et al.; and (D) over claims 1-20 of copending Application No. 10724515 in view of McFarland et al. Each of these four obviousness type double patenting rejections is discussed herein next with the discussion for each focusing on the distinctions between the independent claims of the present application and those of the pending applications.

Starting with the first of these provisional rejections, Applicant notes that the present application and the '498 application were filed on the same day. The rejections based on obviousness-type double patenting in view of the '498 application are of the provisional type as it is not an issued patent. Applicant disagrees with the appropriateness of this rejection as it is believed that the claims of the present application are not made obvious by the claims of the '498 application alone or in combination with the teachings of Cohen "630. In any event, Applicant requests that this provisional rejection be withdrawn and that the present patent application be allowed to issue after which any corresponding obviousness-type double patent rejection in the '498 application can be addressed in that application. In support of Applicant's request, Applicant hereby asserts that this application is the "base" application while the '498 application is primarily directed to improvements or to distinct and non-obvious variations of using a multi-cell mask. Section 804(I)(1) of the MPEP indicates, in part, that

"If "provisional" ODP rejections in two applications are the only rejections remaining in those applications, the examiner should withdraw the ODP rejection in the earlier filed application thereby permitting that application to issue without need of a terminal disclaimer. A terminal disclaimer must be required in the later-filed application before the ODP rejection can be withdrawn and the application permitted to issue. If both applications are filed on the same day, the examiner should determine which application claims the base invention and which application claims the improvement (added limitations). The ODP rejection in the base application can be withdrawn without a terminal disclaimer, while the ODP rejection in the improvement application cannot be withdrawn without a terminal disclaimer.

Turning to the second provisional rejection applicant notes that the '519 application (as pending) contains claims 23 - 48 with claims 23, 25, 28, 33, and 39 being independent.

The present application contains two independent claims (i.e. claims 1 and 23). Though the patentability of each of these claims must be judged based on taking all claim elements in combination, for the present discussion it would seem appropriate to limit the discussion to a subset of those elements.

Claim 1 of the present application is directed to a process for forming a multilayer three-dimensional structure while claim 23 is directed to a process for modifying a substrate. Both claims 1 and 23 include the following features: (1) supplying a multi-cell mask with the cells including independently controllable electrodes, (2) bringing a multi-cell mask into contact with a substrate, and (3) applying a desired electrical activation to at least

one desired cell electrode, to the substrate, and to any other desired electrode or electrodes, such that a desired material is selectively deposited onto the substrate.

Claims 23, 25, and 28 of the '519 application, inter alia, require, "beginning a deposition operation to form a portion of a current layer prior to completing a deposition operation to form a portion of a prior layer". Claim 33 of the '519 application, inter alia, requires "deposition of the at least one structural material in association with a current layer results in deposition of the at least one structural material into one or more voids in a partially formed prior layer". Claim 39 of the '519 application, inter alia, requires "forming interlacing elements in association with given layers that extend from the given layers into preceding layers and result in higher levels of interlacing between the one or more materials deposited in association with the given layers and one or more materials deposited in association with the preceding layers than would exist in absence of the interlacing elements". None of these elements are found in the claims of the present application and, contrary to the assertion by the Examiner, the "multi-cell mask" focus of the claims of the present application is not found in any of the claims of the '519 application. Contrary to the assertions of the Examiner, the teachings of McFarland do not provide a multi-cell mask with each cell of the mask having an independently controllable electrode. In any event, the teachings of McFarland do not bridge the differences in the claims of the present application and those of the '519 application, and thus it must be concluded that the claims of the present application are not made obvious by the claims of the '519 application alone or in combination with the teachings of McFarland. Furthermore, the claims in the '519 application are not made obvious by the claims in the present application or in combination with McFarland.

Turning to the third provisional rejection, Applicant notes that the '574 application (as pending) contains claims 1 - 19 and 21 - 33 of which claims 1, 16, 19, 23, 26, and 28 are independent. Each of claims 1, 16, 19, 23, 26, and 28, inter alia require, "after said activating, relatively moving the face surface of the mask away from the substrate by a distance that is less than a distance that would cause separation of the mask sidewalls from the deposition sidewalls, and continuing application of the current so as to allow a height of the deposition to increase". This element is not found in any of the claims in the present application and the elements included in the independent claims of the present application as noted above, contrary to the assertion by the Examiner, are not found in any of the claims of the '574 application. Contrary to the assertions of the Examiner, the teachings of

McFarland do not provide a multi-cell mask with each cell of the mask having an independently controllable electrode. In any event, the teachings of McFarland do not bridge the differences in the claims of the present application and those in the '574 application and thus it must be concluded that the claims of the present application are not made obvious by the claims of the '519 application alone or in combination with the teachings of McFarland. Furthermore, the claims in the '519 application are not made obvious by the claims in the present application alone or in combination with McFarland.

Turning to the fourth provisional rejection, Applicant notes that the 515 application (as pending) contains claims 1 - 23 of which claims 1, 14, and 17 are independent. Claim 1 of the '515 application, inter alia, requires "bringing a mating surface of a contact mask and a mating surface of the substrate together, wherein initial contact between the mating surface of the substrate and the mating surface of the contact mask occurs in a controlled manner at only selected locations, and wherein continued relative movement between the mask and the substrate bring substantially all relevant mating surfaces of the mask into contact with the substrate".

Claim 14 of the '515 application, inter alia, requires "bringing a mating surface of a contact mask and a mating surface of the substrate together, wherein at initial contact, the mating surface of the mask has a first curvature and a mating surface of the substrate has a second curvature, wherein the first curvature has a nominal radius that is less than that of the second curvature, and wherein after initial contact a separation of the mask and the substrate is further reduced so that additional mating occurs and such that one or both of the first and second curvatures change & so that that first and second curvatures become more alike".

Claim 17 of the '515 patent requires "bringing a mating surface of a contact mask and a mating surface of the substrate together, wherein at initial contact, the mating surface of the mask is more convex relative to the mating surface of the substrate, and wherein after further relative movement between the mask and the substrate mating is completed".

None of the above elements noted for claims 1, 14, and 17 of the '515 application are found in the claims of the present application and, contrary to the assertion by the Examiner, the "multi-cell mask" focus of the claims of the present application is not found in any of the claims of the '515 application. Contrary to the assertions of the Examiner, the teachings of McFarland do not provide a multi-cell mask with each cell of the mask having an independently controllable electrode. In any event, the teachings of McFarland do not

bridge the differences in the claims of the present application and those of the '515 application and thus it must be concluded that the claims of the present application are not made obvious by the claims of the '515 application alone or in combination with the teachings of McFarland. Furthermore, the claims in the '515 application are not made obvious by the claims in the present application taken alone or in combination with McFarland.

In view of the amendments and remarks, the application is believed to be in condition for allowance and reconsideration and withdrawal of the rejections and passage to allowance is earnestly solicited. If any questions should arise concerning this application (or if it would otherwise be useful to discuss this application) please do not hesitate to contact the undersigned by phone.

Respectfully submitted,

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A handwritten signature in black ink, appearing to read 'D. R. Smalley', with a long, sweeping horizontal line extending to the right.

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Amendments to the Drawings:

The attached sheets of drawings include changes to the labeling of each Figure and include the addition of the term "(PRIOR ART)" to FIGS. 1A - 3C as required by the Examiner. Furthermore, FIGS. 4A - 4I have also been labeled as "(PRIOR ART)". Other modifications include corrections to reference numbering and clean up of other minor errors. No new matter is added by these amendments.

Attachments: Annotated Sheets 1 - 27 Showing Changes (Appendix C)
Replacement Sheets 1 - 27